BLIP TESTING PROCEDURE CDMS 8 Oct. 1998
IBAPACAP: BOARD # _____ STATUS _____ DATE _____

C INNER:

1. Test connections and set up:
   - Measure CINNER at CIMON on the front panel (5V/div.) and at AUX. OUTPUT on the Breakout Box (100mV/div) using an oscilloscope (100uS/div).
   - Triggers will be used that are generated by write commands to the Monitor Card. Insure that a working Monitor Card is installed in the crate.
   - CI/CO Range note: Low = 499/90.499k, High = 499/18.299k
   - IMPLANT Range note: Low = 1/43.2k, High = 1/7.15k. The output pulse is so small that IMPLANT MON will be measured at pins 7 & 11 of U90 which is prior to the divider circuit. U90 is located on the bottom side, middle section of the top portion of the board.
   - Triggers are generated by PUSHING the Trigger button on the Monitor Card, or by sending write commands to the Monitor Card, or run the LED PULSE routine

2. **Power up settings**:

CIDAC	10V
CI RANGE	0(low)
CI PULSE	0(disabled)
Delay Trig	0(disabled)

3. **Test preparation settings:**

readfile ibapacap.macro

Set CI DAC to 10V:	***CinnerDAC(10)***
Set to high range:	***ciRange(1)***
Turn pulse enable on:	***ciPulse(1)***
Turn Delay Trigger off:	***trigDelay(0)***

CIDAC	10V
CI RANGE	1(high)
CI PULSE	1(enabled)
Delay Trig	0(disabled)

4. **C INNER test:**

Input settings in Step 3 before starting test.

CIDAC	10V
CI RANGE	1(high)
CI PULSE	1(enabled)
Delay Trig	0(disabled)

Send triggers to IBAPACAP: press the manual button on the monitor card

or

module X
LEDpulse(20)

Note: X is the slot that the monitor card is in, to make changes to the blip card change the module setting back to the slot number that the card is in.

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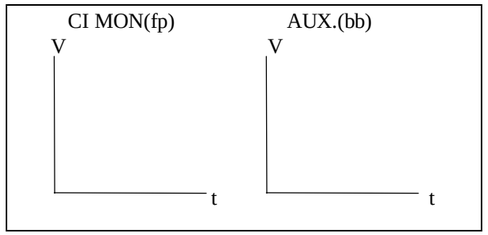
Record output waveform:
Expected output is a ramped squarewave with a flattop of 400uS, with an amplitude of: CIMON=10V, AUX.=300mV.



5. Range test:
Input settings in Step 3 before starting test.

CIDAC	10V
CI RANGE	0(low)
CI PULSE	1(enabled)
Delay Trig	0(disabled)

Select low Range: ***ciRange(0)***
Send triggers to IBAPACAP: module X
LEDpulse(20)
Note: X is the slot that the monitor card is in.

Does the amplitude of either output change? _____

Which one and what is new amplitude? _____ _____

6. **DAC test:**
Input settings in Step 3 before starting test.

CIDAC	1-5V
CI RANGE	1(high)
CI PULSE	1(enabled)
Delay Trig	0(disabled)

Set DAC to various settings from 0 to 10V and record the measurements from the front panel and from the breakout box(BOB): ***CinnerDAC(x)***

Send triggers to IBAPACAP: module X
LEDpulse(20)
Note: X is the slot that the monitor card is in.

DAC	Ci Mon	BOB
0		
2		
5		
7		
10		

7. PULSE DELAY test:
Input settings in Step 3 before starting test.

CIDAC	10V
CI RANGE	1(high)
CI PULSE	1(enabled)
Delay Trig	1(enabled)

Note: Adjustment of R43 will delay the pulse from 363 mSeconds to 36.7 Seconds.

Turn Delay Trigger on: ***trigDelay***

Adjust R43 so the voltage measured at junction of R44 and R43 is 5V.

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Send a trigger by using the trigger button on the Monitor Card. Observe the output and time how long the before the pulse is observed. _____

Adjust R43 so the voltage measured at junction of R44 and R43 is 0.05V.

Send a trigger by using the trigger button on the Monitor Card. Observe the output and time how long the before the pulse is observed. _____

C OUTER:

1. Test connections and set up:
   - Measure COUTER at COMON on the front panel (5V/div.) and at AUX. OUTPUT on the Breakout Box (100mV/div) using an oscilloscope (100uS/div).
   - Triggers will be used that are generated by write commands to the Monitor Card. Insure that a working Monitor Card is installed in the crate.
   - CI/CO Range note: Low = 499/90.499k, High = 499/18.299k
   - Triggers are generated by PUSHING the Trigger button on the Monitor Card, by sending write commands to the Monitor Card, or run the LED PULSE routine(tricky way).

2. **Power up settings**:

CODAC	10V
CO RANGE	0(low)
CO PULSE	0(disabled)
Delay Trig	0(disabled)

3. **Test preparation settings:**

readfile ibapacap.macro

Set CO DAC to 10V:	***CouterDAC(10)***
Set to high range:	***coRange(1)***
Turn pulse enable on:	***coPulse(1)***
Turn Delay Trigger off:	***trigDelay(0)***

CODAC	10V
CO RANGE	1(high)
CO PULSE	1(enabled)
Delay Trig	0(disabled)

4. **C OUTER test:**

Input settings in Step 3 before starting test.

CODAC	10V
CO RANGE	1(high)
CO PULSE	1(enabled)
Delay Trig	0(disabled)

Send triggers to IBAPACAP: press the manual button on the monitor card

or

module X
LEDpulse(20)

Note: X is the slot that the monitor card is in.

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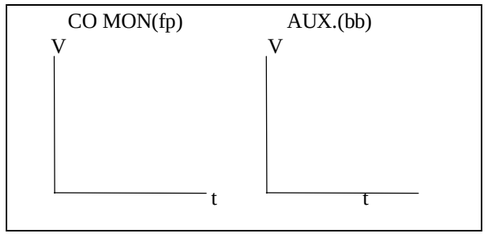
Record output waveform:



Expected output is a ramped squarewave with a flattop of 400uS, with an amplitude of: COMON=10V, AUX.=300mV.

5. **Range test:**
Input settings in Step 3 before starting test.

CODAC	10V
CO RANGE	0(low)
CO PULSE	1(enabled)
Delay Trig	0(disabled)

Select low Range: ***coRange(0)***
Send triggers to IBAPACAP: module X
LEDpulse(20) *Note: X is the slot that the monitor card is in.*

Does the amplitude of either output change? _____
Which one and what is new amplitude? _____ _____

6. **DAC test:**
Input settings in Step 3 before starting test.

CODAC	1-5V
CO RANGE	1(high)
CO PULSE	1(enabled)
Delay Trig	0(disabled)

Set DAC to various settings from 0 to 10V and record: ***CouterDAC(x)***

Send triggers to IBAPACAP: module X
LEDpulse(20)
Note: X is the slot that the monitor card is in.

DAC	Co Mon	BOB
0		
2		
5		
7		
10		

IMPLANT SECTION:

1. Test connections and setup:
   - IMPLANT RANGE note: The output pulse is so small that IMPLANT MON will be measured at pins 7 & 11 of U90 which is prior to the divider circuit. U90 is located on the bottom side, middle section of the top portion of the board. The voltage dividers are: Low = 1/43.2k, High = 1/7.15k.
   - Monitor IMPLANT output at IMPLANT MON. on front panel.

2. **Power up settings:**

IMPLANTDAC OUT	10V
HEAT DC	0(off)
IMPLANT PULSE ENA	0(disabled)
IMPLANT RANGE	0(low)

3. **Test preparation settings:**

readfie implant.macro

Set IMPLANT DAC to 5V: ***ImplantDAC(5)***
Turn HEAT DC off: ***pHeat(0)***
Enable pulse: ***pPulse(1)***
Select high range: ***pRange(1)***

IMPLANTDAC OUT	5V
HEAT DC	0(off)
IMPLANT PULSE ENA	1(enabled)
IMPLANT RANGE	1(high)

4. **DC HEAT test:**
Input settings in Step 3 before starting test.

Turn HEAT DC on: ***pHeat***

IMPLANTDAC OUT	5V
HEAT DC	1(on)
IMPLANT PULSE ENA	1(enabled)
IMPLANT RANGE	1(high)

Record the measurements of Implant Mon on the front panel and of Pins 7 and 11 of U90.

DAC	Implant Mon.	Pin7	Pin
11			
0			
1			
3			
5			
7			
10			

Set IMPLANT DAC to different values from 0V to 10V and record the measurements.

Are the measurements equal in amplitude: _____

5. **Send Pulses:**
Input settings in Step 3 before starting test.

IMPLANTDAC OUT	5V
HEAT DC	0(off)
IMPLANT PULSE ENA	1(enabled)
IMPLANT RANGE	1(high)

Disable HEAT DC: pHeat(0)
Enable pulse: ***pPulse***
Send triggers to IBAPACAP: module X
LEDpulse(20) *Note: X is the slot that the monitor card is in.*

Are pulses observed at the measuring points? _____

6. **RANGE test:**
Input settings in Step 3 before starting test.

IMPLANTDAC OUT	5V
HEAT DC	1(on)
IMPLANT PULSE ENA	1(enabled)
IMPLANT RANGE	1 & 0

Turn HEAT DC on: ***pHeat***

Measure the outputs of U90 pins 6, 7.
Are the outputs equal? _____ yes, condition OK)

Measure the outputs of U90 pins 10, 11.
Are the outputs equal?_____(yes, condition OK)

Select low range: ***pRange(0)***
Measure pins 6 and 10 of U90.

Did the outputs on pins 6 & 10go away? _____ (yes, condition OK)

7. **Continuity test:**
Use a DMM to measure continuity from the junction of R233 and R236 to pin 18 of P1.
Is there continuity? _____

Use a DMM to measure continuity from the junction of R235 and R237 to pin 34 of P1.
Is there continuity? _____